

Patent Application  
Docket No. UF.839XT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner : Lakia J. Tongue  
Art Unit : 1645  
Applicants : Robert A. Burne *et al.*  
Serial No. : 10/574,730  
Conf. No. : 5558  
Filed : January 5, 2007  
For : Recombinant Alkalinizing Bacteria

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION OF ROBERT A. BURNE UNDER 37 CFR §1.132

Sir;

I, Robert Burne, hereby declare:

THAT, I am Professor and Chairman of the University of Florida Department of Oral Biology;

THAT, I am an inventor on the above-referenced application;

THAT, I am a co-author of the following two publications that were cited in the Office Action dated November 25, 2009: Clancy *et al.* (2000, *Infection and Immunity* 68(5):2621-2629) and Dong *et al.* (2002, *Applied and Environmental Microbiology* 68(11):5549-5553).

And being thus duly qualified, do further declare as follows:

Our invention provides a recombinant bacterial cell expressing at least one alkalinizing enzyme and nickel transporter. The cell has at least one nickel transporter gene, such as *ureMQO*, which is required for nickel transporter expression. As a result, active urease activity can be obtained without the need of providing  $\text{Ni}^{2+}$ , which is toxic to humans.

#### The Clancy *et al.* reference

The Clancy *et al.* reference does not disclose our invention because the Clancy *et al.* bacterial cell does not express heterologous DNA encoding a nickel transporter. The Clancy *et al.* reference, upon which I am a co-author, discloses a urease-expressing *S. mutans*. This bacteria contains the urease gene *ureABCEFGD*, but it lacks a nickel transporter gene, which is necessary for nickel transporter expression (see page 2624, left column, Figure 1 and Abstract). In fact, our report on the nickel transporter genes *ureMQO* did not appear in press until more than three years after the publication of the Clancy *et al.* reference.

Because the recombinant construct of Clancy *et al.* lacks the ability to express nickel transporter,  $\mu\text{M}$  concentrations of  $\text{Ni}^{2+}$  were needed to supplement the growth medium for active urease activity.

#### The Dong *et al.* reference

The Dong *et al.* reference is also our own publication. Any portions of the Dong *et al.* reference that are relevant to the current invention originated from only me and Dr. Chen. In addition, the Dong *et al.* reference does not teach or suggest a recombinant bacterial cell expressing a nickel transporter.

In the course of our research on recombinant alkalinizing bacteria, we have been assisted to varying degrees by several people, including Ms. Dong and Ms. Snyder. Ms. Dong and Ms. Snyder did not contribute to the conception of our invention claimed in the current patent application.

Ms. Dong was a graduate student and Ms. Snyder an undergraduate student at the time of the research that was described in Dong *et al.* Ms. Dong and Ms. Snyder worked under the supervision of me and Dr. Chen. Specifically, their work involved assisting in basic characterization of the elements regulating arginine deiminase in *S. gordonii*. Ms. Dong and Ms. Snyder did not contribute to the engineering of the recombinant strains.

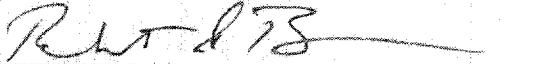
The efforts of Ms. Dong and Ms. Snyder were greatly appreciated and, accordingly, they were acknowledged as co-authors on the publication; however, they did not contribute to the conception of our invention claimed in the current patent application.

Furthermore, the Dong *et al.* reference does not teach or suggest a recombinant bacterial cell expressing a nickel transporter. The Dong *et al.* reference is directed to a recombinant bacterial cell having an arginine deiminase gene cluster, encoding enzymes for arginine catabolism (Dong *et al.* at, for example, Abstract and Figure 1). The Dong *et al.* cell lacks heterologous DNA encoding a nickel transporter.

Although Dong *et al.* mention the recombinant *S. mutans* at page 5552 (Functional analysis of ArcR, last paragraph), the entire discussion is directed to the Clancy *et al.* reference (Reference 14). As discussed above, the recombinant bacterial cell of Clancy *et al.* does not express heterologous DNA encoding a nickel transporter.

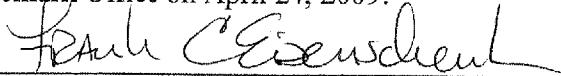
I declare further that all statements made in this Declaration of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the specification or any patent issuing thereon.

Dated: 25 FEB 2010

  
Robert A. Burne

I hereby certify that this correspondence is being electronically filed in the United States Patent and Trademark Office on April 24, 2009.

Patent Application  
Docket No. UF.839XT  
Serial No. 10/574,730



Frank C. Eisenschenk, Ph.D., Patent Attorney

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**COPY**

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COMMUNICATION

Sir:

Attached hereto, please find a Revocation of Power of Attorney with New Power of Attorney and a Statement under 37 C.F.R. §3.73(b) executed by representative of the assignee, University of Florida Research Foundation, Inc. for the above-referenced patent application.

Respectfully submitted,



Frank C. Eisenschenk, Ph.D.  
Patent Attorney  
Registration No. 45,332  
Phone No.: 352-375-8100  
Fax No.: 352-372-5800  
Address: P.O. Box 142950  
Gainesville, FL 32614-2950

FCE/jb

Attachment: Revocation of Power of Attorney with New Power of Attorney under 37 C.F.R. §3.73(b)

REVOCATION OF POWER OF ATTORNEY AND NEW POWER OF ATTORNEY  
AND CERTIFICATE UNDER 37 C.F.R. § 3.73(b)

Sir:

UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC., existing by virtue of the laws of the State of Florida, and having an office at 223 Grinter Hall, Gainesville, Florida 32611, certifies that it is the owner of the entire right, title and interest in, to, and under the following applications for letters patent (including divisionals, continuations, and reissues):

- A) Serial No. 08/588,201, filed on January 18, 1996, for an invention entitled "Humanized Green Fluorescent Protein Genes and Methods"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 008108/0069;
- B) Serial No. 09/169,605, filed on October 9, 1998, pending, which is a divisional of Serial No. 08/588,201;
- C) Serial No. 08/893,327, filed on July 16, 1997, for an invention entitled "Humanized Green Fluorescent Protein Genes and Methods"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 012506/0511;
- D) Serial No. 10/635,310, filed on August 6, 2003, for an invention entitled "Insect Bait"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015173/0916;
- E) Serial No. 10/649,712, filed on August 26, 2003, for an invention entitled "GaN-Type Enhancement Mosfet Using Hetero Structure"; and that it is the assignee of record by

virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 014930/0339;

F) Serial No. 10/443,401, filed on May 22, 2003, for an invention entitled "Automatic Control Method and System for Irrigation"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015153/0315;

G) Serial No. 10/722,285, filed on November 25, 2003, for an invention entitled "Audio-Based Method, System, and Apparatus for Measurement of Voice Quality"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015151/0596;

H) Serial No. 10/314,612, filed on December 9, 2002, for an invention entitled "Methods for Making Functionalized Polymers"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 018572/0617;

I) Serial No. 10/877,437, filed on June 25, 2004, for an invention entitled "Perimeter-Based Defense Against Data Flooding in a Data Communication Network"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015614/0583;

J) Serial No. 11/027,164, filed on December 30, 2004, for an invention entitled "System and Methods for Packet Filtering"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015835/0303;

K) Serial No. 11/722,945, filed on May 1, 2008, for an invention entitled "High Intensity Laser or Diode-Based Lighting Apparatus Having Integrated Optics"; and that it is the

assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 021569/0037;

L) Serial No. 11/063,266, filed on February 22, 2005, for an invention entitled "Time-Based Integrated Potentiostat"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 016134/0897;

M) Serial No. 11/088,933, filed on March 24, 2005, for an invention entitled "Embedded IC Test Circuits and Methods"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 016287/0571;

N) Serial No. 12/109,915, filed on April 25, 2008, for an invention entitled "Embedded IC Test Circuits and Methods"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 022457/0425;

O) Serial No. 11/316,622, filed on December 19, 2005, for an invention entitled "Process for Enhanced Liquid Extraction from Fabrics"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 017412/0781;

P) Serial No. 11/996,913, filed on January 25, 2008, for an invention entitled "System, Device, and Method for Embedded S-Parameter Measurement"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 022457/0499;

Q) Serial No. 12/375,623, filed on August 2, 2007, for an invention entitled "Succinct Representation of Static Packet Classifiers"; and that it is the assignee of record by

virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 022268/0659;

R) Serial No. 11/394,018, filed on March 30, 2006, for an invention entitled “Airfoil for Micro Air Vehicle”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 017854/0176;

S) Serial No. 11/510,013, filed on August 25, 2006, for an invention entitled “Bendable Wing for Micro Air Vehicle”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 019703/0405;

T) Serial No. 09/966,240, filed on September 28, 2001, for an invention entitled “Solid State Potentiometric Gaseous Oxide Sensor”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 017207/0458;

U) Serial No. 10/213,473, filed on August 6, 2002, for an invention entitled “Beta-Analine N-Methyltransferase”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 019099/0567;

V) Serial No. 10/718,764, filed on November 21, 2003, for an invention entitled “Elastomeric Polymers”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015993/0631;

W) Serial No. 12/176,831, filed on July 21, 2008, pending, which is a divisional of Serial No. 10/718,764;

X) Serial No. 10/779,508, filed on February 13, 2004, for an invention entitled “Enhancing the Fragrance of an Article”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 018609/0316;

Y) Serial No. 10/909,587, filed on August 2, 2004, for an invention entitled “High Aspect Ratio Metal Particles and Methods for Forming Same”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015654/0823;

Z) Serial No. 10/574,730, filed on January 5, 2007, for an invention entitled “Recombinant Alkalinating Bacteria”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 018045/0821;

AA) Serial No. 10/873,101, filed on June 21, 2004, for an invention entitled “Biomarkers for Differentiating Between Type 1 and Type 2 Diabetes”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 017856/0406;

BB) Serial No. 10/889,871, filed on July 13, 2004, for an invention entitled “Ferroelectric Hyperthermia System and Method for Cancer Therapy”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 015578/0862;

CC) Serial No. 11/512,528, filed on August 29, 2006, pending, which is a divisional of Serial No. 10/889,871; and

DD) Serial No. 10/746,476, filed on December 23, 2003, for an invention entitled “Polyamide Graft Copolymers”; and that it is the assignee of record by virtue of an assignment

of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 017595/0909;

EE) Serial No. 11/911,629, filed on October 15, 2007, for an invention entitled “Wireless Embedded Test Signal Generation”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 016623/0855;

FF) Serial No. 11/570,491, filed on September 16, 2008, for an invention entitled “Multi-Acceptor Molecular Probes and Applications Thereof”; and that it is the assignee of record by virtue of an assignment of the above-identified application as indicated in the attached copy of an executed assignment;

GG) Serial No. 11/996,257, filed on July 11, 2008, for an invention entitled “Distributed RF/Microwave Power Detector”; and that it is the assignee of record by virtue of an assignment of the above-identified application as indicated in the attached copy of an executed assignment;

HH) Serial No. 11/102,083, filed on April 8, 2005, for an invention entitled “Field Splitting for Intensity Modulated Fields of Large Size”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 022518/0055;

II) Serial No. 10/836,524, filed on April 30, 2004, for an invention entitled “Layout and Architecture for Reduced Noise Coupling Between Circuitry and On-Chip Antenna”; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 022524/0684;

JJ) Serial No. 09/692,628, filed on October 19, 2000, for an invention entitled “Monoclonal Antibody Probe for Detection of Adhesins Associated with Mature Endospores of

Pasteuria Spp"; and that it is the assignee of record by virtue of an assignment of the above-identified application that has been recorded in the United States Patent and Trademark Office at Reel/Frame 021640/0822.

UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC. hereby revokes all previous Powers of Attorney and hereby appoints the following persons registered to practice before the Patent and Trademark Office as its attorneys with full power of substitution and revocation to prosecute this application and all divisions and continuations thereof and to transact all business in the Patent and Trademark Office connected therewith: the registrants of the firm Saliwanchik, Lloyd & Saliwanchik, A Professional Association, P.O. Box 142950, Gainesville, FL 32614-2950, **Customer ID Number 23,557**.

I request that all correspondence be directed to Customer ID Number 23,557.

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC.

By: David L. Day  
David L. Day, Director of Technology Licensing

Date: 4/21/09

## Electronic Acknowledgement Receipt

<b>EFS ID:</b>	5211976
<b>Application Number:</b>	10574730
<b>International Application Number:</b>	
<b>Confirmation Number:</b>	5558
<b>Title of Invention:</b>	Recombinant Alkalinizing Bacteria
<b>First Named Inventor/Applicant Name:</b>	Robert A. Burne
<b>Customer Number:</b>	30448
<b>Filer:</b>	Frank Christopher Eisenschenk/Jenny Bedner
<b>Filer Authorized By:</b>	Frank Christopher Eisenschenk
<b>Attorney Docket Number:</b>	5853-454-1
<b>Receipt Date:</b>	24-APR-2009
<b>Filing Date:</b>	05-JAN-2007
<b>Time Stamp:</b>	09:48:42
<b>Application Type:</b>	U.S. National Stage under 35 USC 371

### Payment information:

Submitted with Payment	no
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### File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/Message Digest	Multi Part/.zip	Pages (if appl.)
1		Comm-RevPOA.pdf	671188 cad1e90eeb7191126dca243a7bd69092b6 8dfbac	yes	8

<b>Multipart Description/PDF files in .zip description</b>			
	<b>Document Description</b>	<b>Start</b>	<b>End</b>
	Miscellaneous Incoming Letter	1	1
	Power of Attorney	2	8
<b>Warnings:</b>			
<b>Information:</b>			
	<b>Total Files Size (in bytes):</b>	671188	
<p><b>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</b></p> <p><b>New Applications Under 35 U.S.C. 111</b>  <b>If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</b></p> <p><b>National Stage of an International Application under 35 U.S.C. 371</b>  <b>If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</b></p> <p><b>New International Application Filed with the USPTO as a Receiving Office</b>  <b>If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</b></p>			

**Acknowledgement Receipt**

The USPTO has received your submission at **09:48:42** Eastern Time on **24-APR-2009**.

No fees have been paid for this submission. Please remember to pay any required fees on time to prevent abandonment of your application.

**eFiled Application Information**

EFS ID	5211976
Application Number	10574730
Confirmation Number	5558
Title	Recombinant Alkalinizing Bacteria
First Named Inventor	Robert A. Burne
Customer Number or Correspondence Address	30448
Filed By	Frank Christopher Eisenschenk/Jenny Bedner
Attorney Docket Number	5853-454-1
Filing Date	05-JAN-2007
Receipt Date	24-APR-2009
Application Type	U.S. National Stage under 35 USC 371

**Application Details**

Submitted Files	Page Count	Document Description	File Size	Warnings
Comm-RevPOA.pdf	8		671188 bytes	◆ PASS
<b>Document Description</b>				
Miscellaneous Incoming Letter			1	1
Power of Attorney			2	8

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary

components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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- *Send general questions about USPTO programs to the [USPTO Contact Center \(UCC\)](#).*
- *If you experience technical difficulties or problems with this application, please report them via e-mail to [Electronic Business Support](#) or call 1 800-786-9199.*